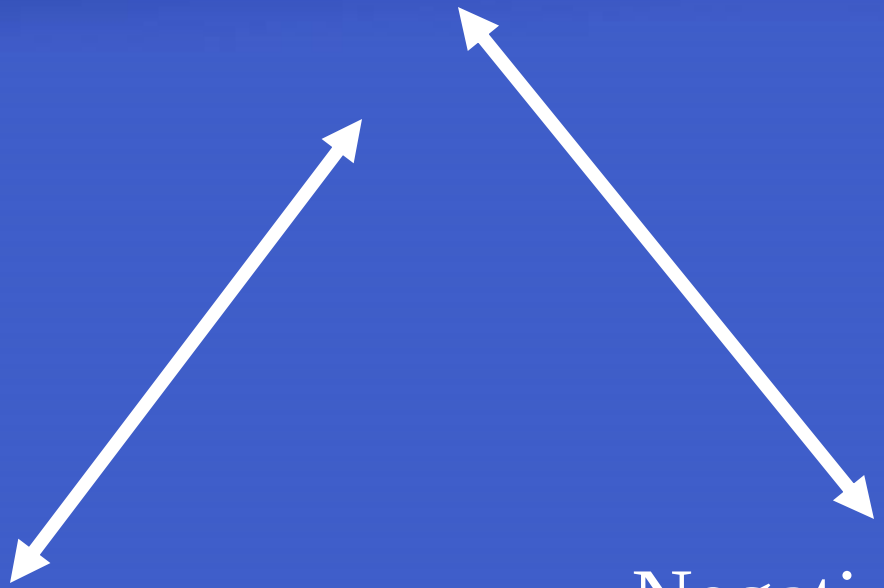
Introduction To Slope

Slope is a measure of Steepness.

Types of Slope



Positive

Negative

Zero

Undefined
or
No Slope

Slope is sometimes referred to as the “rate of change” between 2 points.

The letter “m” is used to represent slope.

Why?

If given 2 points on a line, you may find the slope using the formula $m = \frac{y_2 - y_1}{x_2 - x_1}$

The formula may sometimes be written as $m = \frac{\Delta y}{\Delta x}$.

What is Δ ?

Find the slope of the line through the points (3,7) and (5, 19).

x_1 y_1 x_2 y_2

$$m = \frac{19 - 7}{5 - 3} \rightarrow m = \frac{12}{2} \rightarrow \boxed{m = 6}$$

(3, 4) and (-6, -2)

$$m = \frac{-2 - 4}{-6 - 3}$$

$$m = \frac{-6}{-9}$$

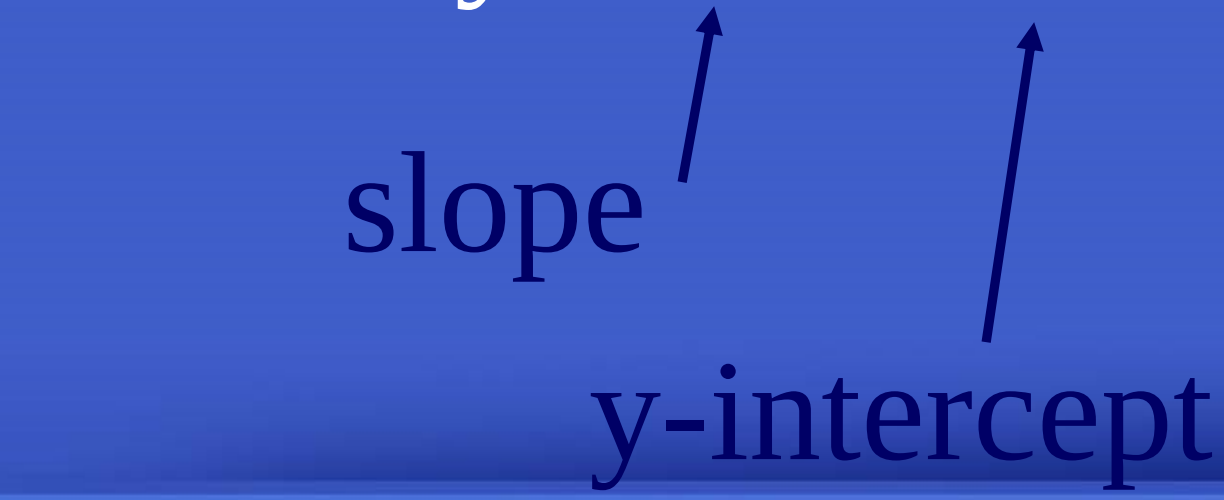
$$m = \frac{2}{3}$$

What if the numerator is 0?

What if the denominator is 0?

If given an equation of a line, there are 2 ways to find the slope and y-intercept.

One method is to write the equation in slope-intercept form, which is $y = mx + b$.



Find the slope and y-intercept of the following equations.

$y = 3x + \frac{1}{2}$

slope= 3

y-intercept = ½

$$3x + 5y = 10$$

First, solve the equation for y.

$$3x + 5y = 10$$

$$5y = -3x + 10$$

$$y = -3/5\ x + 2$$

$m = -3/5$ $b = 2$

Another method to find the slope if given an equation of a line is to write the equation in the form $Ax + By = C$.

$m = -A/B, \quad b = C/B$

Find the slope and y-intercept of the following equations.

A B C

$8x + 11y = 7$

$m = -8/11$ $b = 7/11$

$$-6x = 2y + 14$$

First, rewrite the equation in the form Ax + By = C.

$$-6x - 2y = 14$$

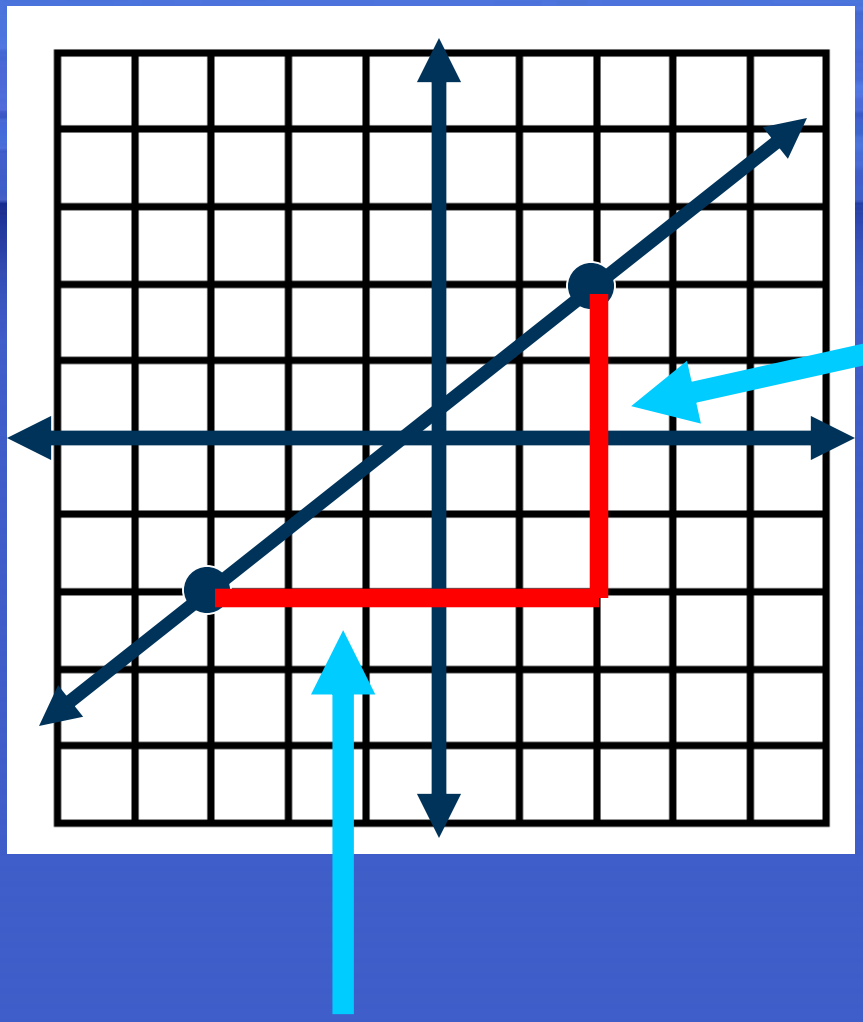
$m = 6/-2$

$m = -3$

$b = 14/-2$

$b = -7$

If given the graph of a line, find the slope by using the “triangle” method to find the rise over run.



rise = 4

run = 5

$$m = \frac{\text{rise}}{\text{run}}$$

m= 4/5


The
End